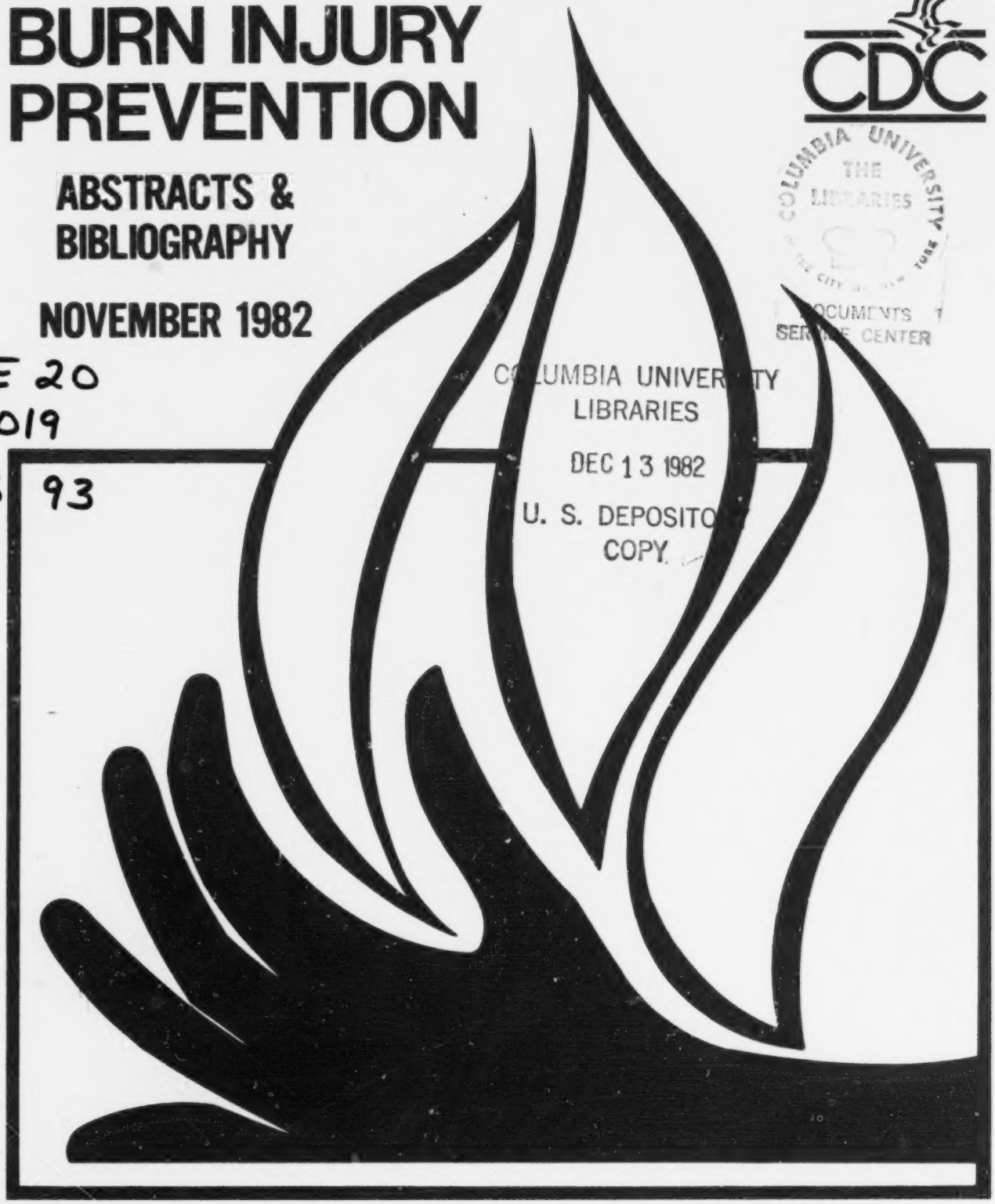
483-L-5

BURN INJURY PREVENTION

ABSTRACTS & BIBLIOGRAPHY

NOVEMBER 1982

HE 20
.7019
:B 93



COLUMBIA UNIVERSITY THE LIBRARIES
DOCUMENTS SERVICE CENTER
COLUMBIA UNIVERSITY LIBRARIES
DEC 13 1982
U. S. DEPOSITORY COPY

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES • Public Health Service • Centers for Disease Control

99-1555

BURN INJURY PREVENTION

ABSTRACTS & BIBLIOGRAPHY

November 1982

Department of Health and Human Services
Public Health Service
Centers for Disease Control
Atlanta, Georgia 30333

Prepared by
Centers for Disease Control
Center for Environmental Health
Publications Activities
Editor: ***Anne A. Olin***
Atlanta, Ga. 30333

Trade names are used for identification only and do not represent an endorsement by the U.S. Department of Health and Human Services or the Public Health Service.

Foreword

In the United States today there is increasing recognition of a major shift in causes of death and disability. Many diseases of the past have been largely controlled. Injuries are now the leading cause of death for Americans during the first four decades of life and are the leading cause of potential years of life lost before age 65. Injuries, like diseases, are both predictable and preventable.

A severe burn is the most devastating injury a human being can sustain and still survive; the home is the scene of most burn injuries and deaths. There are an estimated 60,000 hospital admissions for burn injuries each year, with an average length of hospitalization of 15 days.

Burn Injury Prevention—Abstracts & Bibliography presents a survey of recently published literature in the field. Effort is made to keep the abstracts sufficiently informative to enable the reader to decide whether the original article would be of interest to him or her. The journals in which articles originally appeared should be checked for reprint addresses. The Centers for Disease Control (CDC) is unable to supply reprints of articles cited in this publication.

In compiling these abstracts we use the National Library of Medicine's (NLM's) interactive retrieval service, MEDLARS II. Under this system, both foreign and domestic biomedical periodicals are searched for material dealing with or related to environmental health. We also use the libraries of Emory University, CDC, and other federal agencies. Abbreviations of periodical titles are those used by MEDLARS and listed in NLM's *List of Journals Indexed in Index Medicus.*

Future issues will be devoted to various environmental health topics. Individuals wanting to be placed on the mailing key to receive future issues as published should write to the Environmental Health Services Division, Center for Environmental Health, Centers for Disease Control, Atlanta, GA 30333.

Vernon N. Houk, M.D.
Director
Environmental Health Services Division

READEX FICHE

Contents

Foreword iii

General 1

Burn Injury Causation 9

Burn Injury Prevention 19

GENERAL

1978 Presidential Address: American Burn Association

A.R. Dimick J TRAUMA 1979 Jul;19(7):520-5.

From author's discussion: The bylaws of the American Burn Association define the purposes and objectives of the Association: to stimulate and sponsor the study of and research in the treatment and prevention of burns; to provide a forum for presentation of such knowledge; to foster training opportunities for individuals interested in burns; to encourage publications pertaining to the foregoing activities; and to consider such other matters as may properly come within the sphere of the Association. As it became increasingly apparent that the treatment of burn patients involved a team approach including various disciplines—physicians, nurses, and allied health personnel—the Association evolved to include in its membership the entire burn care team. The membership of the American Burn Association grew from 243 in 1968 in its first year to 1,829 in its 10th year. Registrations at the annual meeting increased from 336 in 1968 to 899 in 1977.

The Planning and Organization of a Regionalized Burn Care System

I.L. Praiss, I. Feller, and M.H. James. MED CARE 1980 Feb;18(2):202-10.

Authors' abstract: The burn problem in the United States, as reflected in published data, is serious. More than 2 million people are injured in burn accidents each year; 70,000 are hospitalized, which involves approximately 9 million disability days; and an estimated 9,000 persons die from their injuries. In 1964, the National Burn Information Exchange (NBIE) was established in Michigan. NBIE collects national and international data currently representing 40,000 burn cases from 133 hospitals in the United States, Canada, and overseas. NBIE provides information on morbidity by etiology, on treatment patterns, and on mortality by cause and institution. The organized data are a major and valuable information resource that is helpful for establishing criteria and policy guidelines for organizing burn care services based on need, severity, and quality measures as reflected by outcomes of care. On the basis of NBIE analyses of current information, it is recommended that (1) only 10% of the acute-care general hospitals in the United States need be involved directly in providing specialized burn patient care; (2) three levels of care be established as determined by severity of injury and intensity of care; and (3) burn care should be organized within a comprehensive regionalized Emergency Medical Service (EMS) system in accordance with the EMS Act of 1973 and the 1976 amendments.

Improvements in Burn Care, 1965 to 1979

I. Feller, D. Tholen, and R.G. Cornell. JAMA 1980 Nov 7;244(18):2074-8.

Authors' abstract: Data from the National Burn Information Exchange indicate that the quality of burn care in the United States is improving in the participating health care facilities. Case reports collected between 1965 and 1979 of 37,442 patients from 120 burn care facilities have been examined. These data show that overall survival rates are increasing and hospitalization times are decreasing at all levels of burn severity. The changes are associated with a trend toward more timely wound closure for full-thickness burns and are evident in the majority of hospitals studied. Tables of current survival rates and hospitalization times, by patient age and size of burn, are presented.

Burn Care in the Emergent Period

C. Dyer. JEN 1980 Jan-Feb;6(1):9-16.

Author's summary: For the victim to survive a severe burn injury, health care workers from various disciplines must be mobilized into action. Ideally, emergency care begins at the scene of the accident, where trained paramedics attend to the fundamental life support needs and begin initial stabilization. Emergency care continues as the victim is transported to the nearest medical facility, where emergency department personnel examine the patient for concurrent injuries and stabilize the patient for transport to a burn care facility. Stabilizing the patient involves estimating the percent of the body burned, initiating

fluid resuscitation, and communicating by phone with the burn care facility. When the patient arrives at the burn care facility, resuscitation continues, a process which leads eventually to the long and painful rehabilitation, a process that may take months, years, or even a lifetime to accomplish. Burn care is an area of practice where success is assured only if the entire health care team is used. The team includes the patient and his [or her] family. It is the coordination of all the disciplines that makes burn care challenging and rewarding.

Plenty of Fuel for Burn Care Discussions (News)

B.J. Montgomery. JAMA 1979 Jan 26;241(4):348, 52.

Better control of infection is associated with increased survival rates in burn patients. In 75% of all deaths infection is either the primary or contributing cause. There is a serious need for more infection control in burn therapy. Additionally, clinicians need the help of research scientists to understand how infection occurs. Long-term study of the balance between stimulation and suppression of various aspects of the host-defense mechanism is also needed, as well as a better understanding of the role of minerals such as zinc or iron in the process. Microbiologic methods are needed for the objective assessment of the density of bacteria on or in the burn wound during various stages of therapy. The postburn state is characterized by an episode of hypermetabolism beginning 48 hours after injury. This hypermetabolic state is the result of an intrinsic metabolic drive and not a homeostatic response to heat loss to the environment. Studies are needed on the roles of the hypothalamus in burns and of hormones in energy production and expenditure.

Burns and Burn Care in Scandinavian Countries

C.E. Jonsson. ANN CHIR GYNAECOL 1980;69(5):168-72.

Author's abstract: The incidence, mortality, and causes of burn injury as well as the organization, principles of treatment, and prevention programs in Scandinavia are reviewed. It is estimated that of a population of 22 million, approximately 85,000 patients each year seek medical advice and 5,300 are hospitalized because of burns. The home is the most dangerous place. Most injuries are preventable. The number of deaths from fire or because of burns is between 11 and 16 per year per million in Denmark, Norway, and Sweden and about 20 [per year per million] in Finland. In Denmark the incidence of burns has decreased, but the mortality has increased. Exposure treatment with or without exposure to warm air is the most common method of management, but interest in early excision and grafting is increasing.

Patients, Staff Are Focal Point of New Burn Unit

S.R. Young and B.D. Thilliander. HOSPITALS 1980 Feb 16;54(4):93-9.

The new burn unit at Norfolk (Virginia) General Hospital was designed to reduce infection, promote patient comfort, and improve staff efficiency and morale. The 4,000-square foot, 8-bed burn unit will solve present space shortage problems and will more carefully segregate the movements of patients, staff, visitors, and material The new unit's eight private rooms, which replace two four-bed rooms, will help minimize the possibility of cross contamination. An improved mechanical system will give greater environmental control, and expanded staff support space will enhance the effectiveness of nursing care. The hydrotherapy room for debridement has a full-body tub, where the tissue will be removed while the patient is immersed in a warm water bath. The room also has a portable whirlpool for debridement of less extensive wounds. The unit's treatment room will provide space for sharp debridement and for skin grafting. A nourishment kitchen located near the nurses' station will store special high-calorie meals for burn patients.

A Review of the Complications of Burns, Their Origin and Importance for Illness and Death

S. Sevitt. J TRAUMA 1979 May;19(5):358-69.

Author's abstract: Complications are the major causes of illness and death after burning, and most of them stem from the burn wound. Their origin and importance are reviewed, with emphasis on problems and growing points in knowledge. Fluid leakage from the circulation into the burn is the cause of hypovolemic shock, but the underlying permeability changes in the burn are only partly understood. Other nonbacterial complications include acute cardiac failure, acute anemia, hemolytic jaundice, renal failure, encephalopathy, complex hypermetabolic effects including pseudodiabetes, gastric and duodenal ulceration, deep vein thrombosis and pulmonary embolism, pulmonary and glomerular microthrom-

bosis, hepatic jaundice, and arterial thrombosis. Involvement of the airway in conflagrations carries special hazards like glottic edema and inhalation of irritant fumes. Nowadays, bacterial causes are dominant and these remain the main challenge. Bacterial infection and invasion of the burn are usually responsible for septicemia, bronchopneumonia, and pyelonephritis, although other sources also contribute. Indirect manifestations of septicemia include paralytic ileus, acute gastric dilatation, toxic myocarditis, and some cases of renal failure. Therapeutic complications like agranulocytosis, thrombocytopenia, and colitis occur at times. High concentrations of oxygen given therapeutically can produce fatal aseptic hypoxic pneumonitis.

A Severity Grading Chart for the Burned Patient

L.D. Roi, J.D. Flora, Jr., T.M. Davis, R.G. Cornell, and I. Feller. ANN EMERG MED 1981 Mar;10(3): 161-3.

Authors' abstract: A graphical method for the quick computation of admission severity for the burned patient is described. The method is easily used by nontechnical personnel and requires only the patient's age, an estimate of the percentage of body surface area burned, and knowledge of the presence or absence of a perineal burn. The severity estimate is obtained by simply applying a straight-edge to the provided chart and reading the severity score from the scale crossed by the straight-edge. The severity score used is an estimate of the patient's mortality risk and is based on an extensively validated multiple logistic model, which was developed by using the combined experience with 11,200 patients at 12 major United States burn units. This severity score can be used with other severity and treatment factors to determine the level of care needed and to aid in triage decisions.

Multifactorial Probit Analysis of Mortality in Burned Patients

B.E. Zawacki, S.P. Azen, S.H. Imbus, and Y.T. Chang. ANN SURG 1979 Jan;189(1):1-5.

Authors' abstract: Burn mortality statistics may be misleading unless they account properly for the many factors which may influence outcome. In reviewing such factors in our patients, we identified age, total burn area, third-degree burn area, prior bronchopulmonary disease, abnormal PaO_2, and airway edema as the factors present on admission which best distinguished survivors from nonsurvivors. Using multifactorial probit analysis, we then calculated the contribution of each to the probability of fatal outcome. The resultant six-factor model significantly improved estimation of the probability of fatal outcome when compared to probit analysis based only on the traditional factors of age and total burn area. It also revealed a spectrum of mortality probabilities varying with the additional factors present. Although crucial in comparing different approaches to burn care, consideration of such prognostic factors will not eliminate the need for randomized treatment trials, because other factors, some of which are obscure, may also influence mortality rates in burned patients.

Burn Injury. Analysis of Survival and Hospitalization Time for 937 Patients

P.W. Curreri, A. Luterman, D.W. Braun, Jr., and G.T. Shires. ANN SURG 1980;192(4):472-8.

Authors' abstract: The charts of 937 patients have been reviewed for survival and length of stay. Probit analysis and binary logistic regression have been performed to develop probability of dying contours incorporating age and percent burn. It appears that improvement in survival has occurred over the last 16 years. The length of hospital stay has also been evaluated. A significant decrease in hospitalization time has occurred in the past year with the advent of a selective wound excisional protocol, without adversely affecting survival. A burn bed requirement chart is presented which incorporates age, burn size, survival probability, and predicted length of stay. The chart allows for estimation of burn bed needs for a known or predicted population of regional burn victims.

Age Differences in the Severity and Outcome of Burns

B.S. Linn. J AM GERIATR SOC 1980 Mar;28(3): 118-23.

Author's abstract: This study concerns the relationship between age and injury in 1,297 patients with recent burns who were admitted to 73 hospitals. Older patients showed a significantly higher proportion of severe injuries than did middle-aged and younger groups. Even after adjustment for the severity of injury, the morbidity and mortality were higher in the over-65 group. These poorer results did

not seem to be entirely accounted for by older age and greater severity of the burn. Surgical treatment such as debridement and grafting was used no more frequently in older patients than in younger ones, even though the greater severity of the burns would normally be expected to require more operations. The fact that older patients had more complications could have influenced physicians in their surgical decisions. Furthermore, the attitude that the elderly are less able to tolerate surgical procedures may have played a role in the use of less aggressive treatment in relation to the severity of the burn.

Care and Needs in a Children's Burns Unit

J.R. Solomon. PROG PEDIATR SURG 1981; 14:19-32.

Author's abstract: The burned child requires an overall care that recognizes the child not as a small adult, but as a person in his [or her] own right with special physiological and psychological needs. Proper management requires a team approach with each member having a recognized role, but all working with one aim in view—the earliest return of the child to his [or her] home and school environment with well-healed burns and an acceptance of the injury with as little psychological disturbance as possible. Each child must be recognized individually and care adjusted according to the child's age and background and in relationship with any associated specific psychological disturbance. Special fears, including death, and apprehension as to treatment, pain, and disfigurement require understanding and sympathetic support. A child should not be isolated from other children or family members unless absolutely necessary. An early decision has to be made as to whether the seriously burned child should be resuscitated, and children presenting with burns may be at risk from maltreatment and may need protection and supervision of their growth and development. Parents need to be fully informed of their child's injury and treatment, to have easy access to staff with open visiting, and to be able to attend therapy discussion groups. Providing manuals and booklets to parents and children on burns and their treatment can relieve anxiety and secure a confident attitude toward the total management of the burned child. Rehabilitation involves both the child and the family and requires careful management and, in the severely burned, a gradual reintroduction to normal home and school life.

Rehabilitating Families with Burned Children

S.S. Cahners and N.R. Bernstein. SCAND J PLAST RECONSTR SURG 1979;13(1):173-5.

Authors' abstract: A critical factor in the successful or unsuccessful life adjustment of the badly burned patient is his [or her] family's reaction to this chronic problem: its ability to support him, to help him pursue the long course of treatment and its many associated problems, and also to help him navigate the social world into which he must go. The high incidence of emotional disturbance in families sustaining burn injuries makes it vital to deal effectively [with] and, in a sustained manner, to assess the types of emotional disturbances which exist in these families and to see how they influence the responses to the injuries and to the long and arduous treatments that follow. Different patterns of adaptation occur, some much related to economic class and special types of psychiatric disorder in the family. Some reactions of chronic grief and intermittent helplessness and hopelessness may transcend all groups, but the ability to follow through in later care varies enormously and is correlated with the overt depression of the mother. Several types of reaction are epitomized in the cases presented, along with directives for their management. The interplay of social, somatic, and psychological factors leading to these patterns is delineated.

Self-Esteem of Severely Burned Patients

M.L. Bowden, I. Feller, D. Tholen, T.N. Davidson, and M.H. James. ARCH PHYS MED REHABIL 1980 Oct;61(10):449-52.

Authors' abstract: As a part of a retrospective rehabilitation study conducted in 1977, 320 persons treated at a major burn center between 1956 and 1976 were interviewed by professional survey research interviewers using a specially developed 519-item questionnaire that included standard socioeconomic data, along with information about the person's life pattern after the burn. In addition, several complex dimensions of personality were measured through multiple indicators rather than by single items. According to the midpoint of the scale of Coopersmith's Self-Esteem Inventory, 85% of the respondents had adequate to high self-esteem. Although the size of the burn and part of the body burned did not seem to significantly affect self-esteem, age when burned and time since burn did. Disfigured females had significantly lower self-esteem than disfigured males. Social support, life satisfaction, involvement in social and recreational activities, and employment were

found to influence the group as a whole. Respondents with low self-esteem spent twice as many days in bed and missed considerably more days of work in the year before the study than did those with moderate or high self-esteem. The findings in this study indicate with some certainty that the majority of burned people make a successful adjustment after even large and disfiguring injuries and that successful rehabilitation is long-term and episodic.

Social Work with Burns Patients

O.A. Gwyther and J. Smith. PHYSIOTHERAPY 1980 Jun;66(6):188-91.

From authors' discussion: Social work with burns patients requires a high level of acceptance, sensitivity, and flexibility. Acceptance, because unless the patient can be seen as an individual with needs, often beyond the norm of hospital patients, success is unlikely. Sensitivity, because the very nature of the trauma sustained demands this of anyone attempting to intervene. Flexibility, because the social worker is part of the multidisciplinary team and must allow for the functions of other members of the team. A social worker in a burns unit has to be aware of the patient's ability or difficulty in expressing his or her problems and in coping with stress. The social worker has to be aware of the treatment plans made by other members of the team and formulate his or her own plans around them. The social worker's main functions relate to relationships and communications. The social worker tries to enable the patient to achieve some change in behavior, attitude, or situation. The social worker often acts as a bridge between those who care for the patient both at home and in the hospital, and can often set up lines of communication between these people.

Quality of Life After Major Burns

B.C. Blades, C. Jones, and A.M. Munster. J TRAUMA 1979 Aug;19(8):556-8.

Authors' abstract: The only method now available of measuring the outcome of major burns is the mortality rate. We have developed a scale, administered by interview and physical examination, with which the quality of life in survivors may be measured. In an initial group of 32 patients, we took each patient's own preinjury level of performance as a baseline. The size of the burn had no significant effect on the postburn score achieved. Substantial numbers of patients achieved levels superior to their preburn scores. Improvement in scores did not begin until 12 months had elapsed from the time of injury. We believe that scales such as this will help determine what happens to patients after their injuries, pinpoint areas of weaknesses in the burn program, and enable better comparison of performance between clinical facilities.

The Epidemiology of Burn Injury in New York

G. Feck and M.S. Baptiste. PUBLIC HEALTH REP 1979 Jul-Aug;94(4):312-8.

Authors' abstract: A population-based study of all patients hospitalized for burns in a 2-year period was conducted in upstate New York. The objective was to provide data for setting burn injury prevention priorities and for formulating treatment facility plans. The incidence rate of hospitalization for burns was 27 per 100,000 population per year. The mean estimated size of the burn wounds was 9% of the body surface, and fewer than 10% of the patients had large wounds (more than 20% of the body). Burn patients were admitted to hospitals of all capabilities, including 199 or 89% of the 223 hospitals in upstate New York. Substantial numbers of patients with large and deep wounds were treated in hospitals with little burn treatment experience. High-risk groups were the young, blacks, and males. Burn injuries occurring at work were common. Burn injuries resulting in hospitalization occurred less frequently, and the wounds were smaller than would have been expected on the basis of reports in the literature.

An Epidemiological Investigation of the Incidence of Burns in Omaha-Douglas County, Nebraska, 1960

V.F. Colon and E.D. Lyman. NEB STATE MED J 1962 Aug;47:445-53.

Results of a burn survey of 154 hospitalized patients in 1960 in Omaha-Douglas County, Nebraska, are reported. Because the burn rate was 10 times as high as the national average, education, inspection, fire law enforcement, research, and establishment of a burn treatment center were recommended.

The Doctor-Patient Covenant

B.E. Zawacki. J TRAUMA 1979 Nov;19(11 Suppl):871-3.

From author's discussion: Recommended guidelines require that burned patients must always be

treated maximally unless, being competent and after being fully informed, they voluntarily refuse. If they do so, we do not have the right to give them such treatment against their will. This approach implies that we should have up-to-date mortality and morbidity data, and that full disclosure of facts and rights must be given unless the patient doesn't want to hear them. This approach also requires a closer patient-physician relationship and a lot more work than usual in developing rapport. The proposed guidelines originate in a conviction that the decision involved is preeminently medical, and not political or purely utilitarian. Medical decisionmaking is a three-part process. The first part answers the question "What can be wrong?" This is the diagnostic part of medical decisionmaking; it is a scientific or professional business, weighing probabilities and costs of error. The second part of medical decisionmaking answers the question "What can be done?" This, too, is scientific or professional, and weighs alternatives versus costs and benefits. The third part in every medical decision seeks to answer the question "What should be done?" This is not a scientific decision and does involve the patient. It weighs the patient's versus the caregiver's values, and at its best it involves the doctor and patient sharing in the process, listening as well as talking, rather than the doctor just doing what he judges should be done. This last step in the process produces consent. In the contractual or covenantal model of the patient-physician relationship, the patient is the contractor and the doctor is the contractee. The doctor gives the patient the diagnosis and recommends treatment and the patient in return gives consent.

The Burn Survivor's Point of View

D. Jayne. J TRAUMA 1979 Nov;19(11 Suppl): 920-1.

A burn survivor gives his views on informed consent: "I do not feel that I really knew the significance of my condition for at least 3 weeks, possibly a month, when I was out of intensive care and on the ward. If I had [had] to make a decision that first day or first week, I do not feel it would have been with an informed consent. Somebody . . .[might] have told me a lot of things, but they would not have registered. I would not have been able to make a decision; and, as an attorney, I sympathize." The author advocates long-term rehabilitation therapy for the seriously burned survivor.

First-Aid Treatment of Burns

J.R. Solomon, M. Brooksbank, and W. Swift. AUST FAM PHYSICIAN 1979 Jul;8(7):785-8.

Authors' abstract: A burn refers to the damage caused to the skin and, sometimes, to deeper structures by heat (flame, scald, contact, electricity), chemical agents, or radiation. Methods of first-aid treatment of burns are varied, imprecise, and sometimes harmful. This article deals with the major principles involved in first aid which, when implemented, will limit the damage created by the burn. The medical profession must be aware of what can be achieved and what steps must be taken in the initial treatment of the burn. The profession is called upon to offer first aid, to give advice, and to lecture on accidents in our community; so it is necessary to have a clear plan of treatment.

Try Not to Say 'Third-Degree Burn' Anymore (News)

Anonymous. JAMA 1979 Jan 26;241(4):347.

The degree rating system for describing a thermal injury can be ambiguous. For example, one patient with full-thickness burns over 20% of the body and another patient with surface and partial-thickness burns over 70% of the body could both be described as suffering from third-degree burns, yet their burn injuries and treatment needs are radically different. Descriptions that provide numerical values for the extent, depth, and location of the wound, plus the patient's age, preexisting complications, and causes of the injuries are increasingly preferred.

SELECTED BIBLIOGRAPHY

Anonymous: Burnt children (editorial). BR MED J 1969 Mar 22;1:790.

*Anonymous: Try not to say 'third-degree burn' anymore (news). JAMA 1979 Jan 26;241(4):347.

*Blades BC, Jones C, Munster AM: Quality of life after major burns. J TRAUMA 1979 Aug;19(8):556-8.

*Bowden ML, Feller I, Tholen D, Davidson TN, James MH: Self-esteem of severely burned patients. ARCH PHYS MED REHABIL 1980 Oct;61(10):449-52.

*Cahners SS, Bernstein NR: Rehabilitating families with burned children. SCAND J PLAST RECONSTR SURG 1979;13(1):173-5.

*Colon VF, Lyman ED: An epidemiological investigation of the incidence of burns in Omaha-Douglas County, Nebraska, 1960. NEB STATE MED J 1962 Aug:445-53.

*Curreri PW, Luterman A, Braun DW Jr, Shires GT: Burn injury. Analysis of survival and hospitalization time for 937 patients. ANN SURG 1980;192(4):472-8.

Daramola T: Epidemiology of burns in Lagos. W AFR MED J 1967 Dec;16:222-6.

*Dimick AR: 1978 presidential address: American Burn Association. J TRAUMA 1979 Jul;19(7):520-5.

*Dyer C: Burn care in the emergent period. JEN 1980 Jan-Feb;6(1):9-16.

Feck G, Baptiste M, Greenwald P: The incidence of hospitalized burn injury in upstate New York. AM J PUBLIC HEALTH 1977 Oct;67(10):966-7.

*Feck G, Baptiste MS: The epidemiology of burn injury in New York. PUBLIC HEALTH REP 1979 Jul-Aug; 94(4):312-8.

*Feller I, Tholen D, Cornell RG: Improvements in burn care, 1965 to 1979. JAMA 1980 Nov 7;244(18):2074-8.

Flame-Free Design Conference: Flame-free '72: a summary report. Designers Group, Inc., 1972.

Greenwald P, Crane KH, Feller I: Need for burn care facilities in New York State. NY STATE J MED 1972 Nov 1;72:2677-80.

*Gwyther OA, Smith J: Social work with burns patients. PHYSIOTHERAPY 1980 Jun;66(6):188-91.

*Jayne D: The burn survivor's point of view. J TRAUMA 1979 Nov;19(11 Suppl):920-1.

*Jonsson CE: Burns and burn care in Scandinavian countries. ANN CHIR GYNAECOL 1980;69(5): 168-72.

Klein D: A reappraisal of "the host" in the epidemiological model of accidents. National Safety Council Conference, Runpke, Va., 1970 Apr.

*Linn BS: Age differences in the severity and outcome of burns. J AM GERIATR SOC 1980 Mar;28(3):118-23.

Linn BS, Stephenson SE, Smith J: Evaluation of burn care in Florida. N ENGL J MED 1977 Feb 10;296(6):311-5.

Long RT, Cope O: Emotional problems of burned children. N ENGL J MED 1961 Jun 1;264(22):1121-7.

MacArthur JD, Moore FD: Epidemiology of burns: the burn prone patient. JAMA 1975 Jan 20;231(3):259-63.

MacLeod A: Adult burns in Melbourne: a five-year study. MED J AUST 1970 Oct 24;2:772-7.

*Montgomery BJ: Plenty of fuel for burn care discussions (news). JAMA 1979 Jan 26;241(4):348, 352.

Moyer CA: The sociological aspects of trauma, with particular reference to thermal injury. AM J SURG 1954;87(3):421-30.

Munro IR, Farmer AW, Csima A, Lindsay WK: An analysis of burns in children. CAN MED ASSOC J 1967 Aug 27;97:459-63.

*Praiss IL, Feller I, James MH: The planning and organization of a regionalized burn care system. MED CARE 1980 Feb;18(2):202-10.

Pruitt BA Jr: The burn patient: I. Initial care. CURR PROBL SURG 1979 Apr;16(4):1-55.

Rao BS: Burns in childhood and early adolescence: an epidemiological study of hospitalized cases. J INDIAN MED ASSOC 1966 Jan 1;46(1):23-8.

*Abstracted

*Roi LD, Flora JD Jr, Davis TM, Cornell RG, Feller I: A severity grading chart for the burned patient. ANN EMERG MED 1981 Mar;10(3):161-3.

Ryan RF, Rasmussen JE: Burns in children. PLAST RECONSTR SURG 1968 Oct;42(4):334-8.

School of Public Health, University of North Carolina: Burn injury research. In: Strouse DF, Westaby JR, eds. Accident research, vol. 1. Chapel Hill, N.C., 1968-1969:1-20.

*Sevitt S: A review of the complications of burns, their origin and importance for illness and death. J TRAUMA 1979 May;19(5):358-69.

*Solomon JR: Care and needs in a children's burns unit. PROG PEDIATR SURG 1981;14:19-32.

*Solomon JR, Brooksbank M, Swift W: First-aid treatment of burns. AUST FAM PHYSICIAN 1979 Jul;8(7): 785-8.

Spencer AD, McDonald WE: The burned Negro in St. Louis. J NAT MED ASSOC 1963;55(1):13-7.

Stitz RW: Burns in children: a three-year study. MED J AUST 1972 Feb 19;1:357-61.

Swartz EM: Will it happen again? (editorial). ARCH SURG 1972 Jan;104:19-20.

Thomsen M, Sorenson B: The total number of burn injuries in a Scandinavian population. SCAND J PLAST RECONSTR SURG 1967;1:84-9.

Tough JS: Burns and scalds in the home. PRACTITIONER 1954 Jun;174:637-41.

U.S. Department of Health, Education, and Welfare, Second Annual Report to the President and the Congress on the Studies of Deaths, Injuries, and Economic Losses Resulting from Accidental Burning of Products, Fabrics, or Related Materials, through June 1970 submitted by the Secretary of Health, Education, and Welfare, 1971 Mar 4.

Williams H, Bowman N, Malare G: A social study of burns and scalds in children. MED J AUST 1958 Nov 1;45(18):599-601.

Wright MT: Relation of burning injuries to social circumstances. LANCET 1945 Feb 3;1:155.

*Young SR, Thilliander BD: Patients, staff are focal point of new burn unit. HOSPITALS 1980 Feb 16;54(4):93-9.

*Zawacki BE: The doctor-patient covenant. J TRAUMA 1979 Nov;19(11 Suppl):871-3.

*Zawacki BE, Azen SP, Imbus SH, Chang YT: Multifactorial probit analysis of mortality in burned patients. ANN SURG 1979 Jan;189(1):1-5.

*Abstracted

BURN INJURY CAUSATION

The Flammability of Different Textiles and Its Influence on the Severity of Skin Burns

L. Pakkala. ANN CHIR GYNAECOL 1980;69(5): 240-3.

Author's abstract: The flammability hazard of a fabric depends on the chemical nature of the fiber or fiber blend, finishing treatment, fabric structure (tightness, thickness, nap of surface), and the type of garment. Ease of ignition, ease of flame spread, and tendency to shrink and melt are important factors. Lately, the rate of heat transfer from a flammable fabric has attracted more attention. Now methods have been developed to measure this property, which, from the point of view of skin damage, is extremely important. In this article the flammability properties of common textile materials are discussed in the light of some recent investigations.

Deaths from Clothing and Bedding Fires

G. Williams-Leir. CAN J PUBLIC HEALTH 1968 Oct;58:444-53.

Results of a survey of fatal clothing and bedding fires in Ontario, Canada, between 1954 and 1963 are reported. Factors examined include age, sex, and reaction of victim, source of ignition, type of fabric involved, chronology (year, month, and time of day of accident), place of occurrence, survival time, cause of death, alcohol or drug involvement, extent of fire, and obstacles to escape.

Survey of Fatal Clothing Fires

E.E. Juillerat, Jr. BULL NY ACAD MED 1967 Aug; 43(8):646-8.

Preliminary data on one- or two-fatality fires in which clothing was the first item to ignite were tabulated according to age and sex of the victim, place of occurrence, incidence of handicap, source of ignition, type of clothing and fabric worn, and cause of death.

Domestic Child Burn and Scald Accidents (Analysis of Data from 4 Indian Burn Units)

A.M. Learmonth. J INDIAN MED ASSOC 1979 Jul 16;73(2):43-7.

Author's summary and conclusion: Agents of injury in relation to age of child, season, and geographical location are discussed in the context of work already done in the field, for data from burns units in Delhi, Pune, Hyderabad, and Bangalore. Some interesting material can be obtained from analysis of burns unit records. However, more definite conclusions could be reached if a standardized form of data collection were observed. Regional differences in the types of accidents occurring could be of vital importance in safety campaigns. Clothing fires emerge as a possible priority for prevention, since they are both common and severe in effect.

Factors in Child Burn and Scald Accidents in Bradford 1969-73

A. Learmonth. J EPIDEMIOL COMMUNITY HEALTH 1979 Dec;33(4):270-3.

Author's abstract: A study has been undertaken of burn and scald accidents in children in Bradford. In the first part, 1,577 accidents treated in the Bradford Royal Infirmary between 1969 and 1973 were analyzed by city ward of residence of the patient, and these were correlated with 14 social and demographic characteristics of the wards. A correlation was found between burn and scald accidents and New Commonwealth immigrants and overcrowding. In the second part, 78 families at the burns clinic were interviewed. Similar patterns to those in the larger study were found. Although clinical impressions emerged concerning the details of the accidents, the interviews did not provide any explanation for the main findings.

Scalds to Preschool Children

J. Langley, J. Dodge, and P.A. Silva. NZ MED J 1981 Feb 11;93(677):84-7.

Authors' abstract: A survey of scalds to 64 children under 5 years of age was undertaken. The results showed that a wide variety of circumstances resulted in these injuries. The significance of developmental

aspects is demonstrated, as is the need to modify the child's environment. Poor supervision was not a significant factor in the incidents described. The problems associated with implementing various preventive strategies are discussed. It is concluded that more attention needs to be given to improving the effectiveness of "active" countermeasures because of the lack of practical "passive" countermeasures.

Antecedents of Burns and Scalds in Children

H.L. Martin. BR J MED PSYCHOL 1970 Mar;43: 39-47.

On the basis of a number of interviews conducted with children treated in a 6-month period at a London burn unit and their parents, the author identified certain "psychodynamic patterns" of family life presented at the time of thermal injury which were thought to be causative factors in 41 of 46 cases.

Prevention of Tea and Coffee Scalds (Letter)

L. Gonski. MED J AUST 1979 Nov 3;2(9):484.

A study of 4,589 child accident cases collected from 9 Sydney hospitals during 1978 underscored the risk, to children, of scalds from hot tea and coffee. Fifty-four (1.2%) cases were reported; 80% of the children were less than 5 years old. The study highlighted the severity of injury, with 60% of the children requiring admission to a hospital compared with an admission rate of 20% for the total sample. The children were usually scalded while in the kitchen.

Childhood Burns: A Sociological Survey and Inquiry into Causation

J.P. Savage and I.O.W. Leitch. MED J AUST 1972 Jun 24;1:1337-42.

This 2-year study of children under 15 admitted to a South Australian hospital reviews sociological factors of the family, such as parents' occupation, race, and marital status. Burns and scalds are dealt with separately as to causation, severity, depth, and prevention.

Child Abuse by Burning

N.H. Stone, L. Rinaldo, C.R. Humphrey, and R.H. Brown. SURG CLIN NORTH AM 1970 Dec;50(6): 1419-24.

The authors report the occurrence and seriousness of burns due to child abuse, using patients admitted to the Cook County Hospital as a basis for their discussion. A list of clues that should alert the attending physician to the possibility of child abuse and the steps followed once it is suspected are given.

Hazards of Wood-Burning Stoves to Children (Letter)

J.P. Remensnyder and P. von Ryll Gryska. N ENGL J MED 1981 Apr 9;304(15):915-6.

Wood-burning stoves are rapidly becoming common household fixtures and are consequently a new source of burn injuries, especially among children. Six children, ages 6 mo to 11 yr, were treated for burns involving wood stoves. Four patients presented with contact burns and two with flame burns. All six required hospitalization. The children with serious contact burns were 6 mo to 2½ yr—all had burns of the face and hands that were potentially disfiguring, and all required surgery for third-degree burns. Their burns resulted from an accident common to this age group—falling down. The two flame-burn injuries occurred in an 11-year-old and a 3-year-old while they were lighting stoves, and both caused second- and third-degree burns to the face and dominant hand. Both required excision and grafting. Because wood stoves are usually located in kitchens and family rooms, they are a constant threat to unwary children. The temperature of the surface of a wood stove may be 400° to 500° F (200° to 260° C) and requires only momentary contact to cause deep second- and third-degree burns. In addition to strict adherence to local safety codes regulating the use of wood stoves, the following safety precautions are suggested: fence in wood-burning stoves, especially with toddlers at home; teach children not to light the stove; do not use stoves when babysitters or visiting children are present; never use gasoline, kerosene, or "fire starter" in wood stoves; and do not use artificial logs in wood stoves, since they emit toxic gases into the room and can explode when too hot or when added to fires that are already burning.

Wall Socket Electrical Burns: Relevance to Health Education?

T.L. Young and K.S. Reisinger. PEDIATRICS 1980 Apr;65(4):825-7.

Accidents cause more injuries and deaths in chil-

dren and young adults than any single disease process. Whereas millions of dollars and innumerable hours are spent in caring for individuals injured in accidents, research directed toward prevention of accidents and subsequent injury has been so meager that many facets of this field have not been investigated beyond a cursory examination. In this study, authors examined the frequency and severity of wall socket electrical injuries in children by reviewing the records of patients admitted to Children's Hospital of Pittsburgh during 1969 to 1979 and treated in the outpatient department during 1974 to 1979 with the diagnosis of electrical burns. Of the 36 children treated for electrical burns, 21 were admitted and 15 were cared for as outpatients. Injuries were most common in males (60%), with the highest incidence occurring in the 1- to 2-year-old age group. Children less than 5 years of age accounted for 86% of all cases. Only one patient was identified with a burn from contact with a wall socket, a 2- x 2-cm second-degree burn of the hand. Contact with the socket of an extension cord caused burns in three children. An additional 25 children were burned as a result of biting an electrical cord.

Electrical Burns and Shocks to Children

Anonymous. FDA PAPERS 1971 Apr:29-31.

An examination of 20 accidents in which children received electrical burns to the mouth implicates the receptacle end of extension cords as a focus for preventive effort. The junction between the extension cord and the appliance cord frequently closes improperly. Injuries resulting from metal objects inserted in wall outlets are also discussed.

Electrical Burns of the Mouth in Children

S.E. Blandford. ROCKY MT MED J 1968;65:25-8.

A survey of children admitted to a Denver hospital for electrical mouth burns shows the most common causative agent to be a multiple-outlet extension cord. Prevention and treatment for this type of injury are outlined.

Electrical Burns: Pathophysiology and Complications

S.I. Esses and W.J. Peters. CAN J SURG 1981 Jan; 24(1):11-4.

Authors' abstract: The authors review the pathophysiology and complications of electrical injuries. Such injuries can be categorized into direct electrical injuries, arc burns, and flame burns. Each has a distinct appearance and prognosis. Nine patients with electrical injuries were admitted to the Toronto General Hospital over the 5-year period 1973 to 1978. All were men, and the average age was 33 years. Five patients required amputation. In one patient a convulsive disorder developed 3 weeks after injury. One patient demonstrated peripheral nerve injury with complete axonal lesions of the right median and ulnar nerves; there was progressive full return of nerve function over 12 months. Direct electrical injury to nerves is usually transient, and return of function can be expected unless there has been a concomitant thermal or mechanical injury.

Caustic Ingestion: Controversies in Management. A Review of 214 Cases

D.B. Hawkins, M.J. Demeter, and T.E. Barnett. LARYNGOSCOPE 1980 Jan;90(1):98-109.

Authors' abstract: Two hundred and fourteen patients admitted with a history of caustic ingestion are reviewed. Sixty-five had mucosal penetrating burns. Children 5 years of age and under accounted for 39% of admissions, but only for 8% of burns requiring treatment. Adults accounted for 48% of admissions and for 81% of burns requiring treatment. Complications associated with mucosal penetrating burns occurred in 31 patients; all but one were due to lye or acids. A 3-year prospective study evaluating methylprednisolone in the management of caustic burns is reported. This included 24 patients with mucosal penetrating burns due to lye or acids. The results of this study, and this review as a whole, indicate that methylprednisolone is beneficial in moderately severe burns due to lye, but is not indicated for severe burns from liquid lye or for acid burns.

Foreign Body and Caustic Ingestion: Management 1979

R.W. Cantrell, M.E. Johns, R.A. Jahrsdoerfer, and W.C. McLean. ANN OTOL RHINOL LARYNGOL 1979 Nov-Dec;88(Pt 1):872-9.

Authors' abstract: Most physicians involved in the diagnosis and management of foreign body aspiration and caustic ingestion assume that the numbers of these cases are decreasing. A sizeable number of patients die of caustic ingestion and poisoning annually, and deaths from foreign body ingestion have more than doubled since 1950. Increasing the significance

of these needless tragedies is the fact that the most frequent victim is a young, healthy child. Physicians should encourage educational campaigns to alert parents to the dangers of caustic agents and small items capable of being aspirated. They should be conversant with the treatment of both. This paper reviews current opinions regarding management.

Stressful Life Events and Burn Injuries

R. Noyes, Jr., S.J. Frye, D.J. Slymen, and A. Canter. J TRAUMA 1979 Mar;19(3):141-4.

Authors' abstract: About half of the 67 adults admitted to a burn treatment unit during the course of a year were found to have preexisting physical or psychiatric conditions, or both, that increased their susceptibility to injury. In addition, the majority of victims were unmarried, unemployed, and from a low social class, circumstances that tended to increase their vulnerability. A significant increase in stressful life events was reported by these patients during the year preceding burn injury. This life change was negatively correlated with age, income, and number of friends, and positively correlated with social class and psychiatric illness. Two subgroups of persons vulnerable to burns were identified: the first, older women with physical illness, and the second, persons of low social class with psychiatric disorders. The findings have implications for burn prevention and rehabilitation of burn victims.

Predisposing Causes of Burns in Adults

D.O. Maisels and J. Ghosh. PRACTITIONER 1968 Nov;201:767-73.

The cases of 794 patients admitted to Lancashire Regional Burns Unit between 1962 and 1965 are broken down according to age, sex, burn versus scald, and industrial versus domestic. Twenty-five percent of these involved some predisposing factor, the majority being epilepsy or a condition found primarily among the elderly. The factors are detailed within the article.

Burn Injuries Related to Suicide

G.V. Persley and S.P. Pegg. MED J AUST 1981 Feb 7;1(3):134.

Authors' abstract: Of 1,060 admissions to the burns unit, Royal Brisbane Hospital, over a 12-year period, there were 30 cases (2.8%) of attempted suicide. Fourteen (47%) of these patients died. The psychosocial features of persons who use self-ignition as a method of suicide are consistent with those of suicidal persons in general. The morbidity is high and the outcome is often fatal, especially for those using a flammable liquid.

A Comparison of Age-Specific Burn Injury Rates in Five Massachusetts Communities

A. MacKay, J. Halpern, E. McLoughlin, J. Locke, and J.D. Crawford. AM J PUBLIC HEALTH 1979 Nov;69(11):1146-50.

Authors' abstract: We measured burn incidence rates for residents of five Massachusetts cities. The data set included all nonoccupational burn injuries and cases of smoke inhalation requiring treatment on an inpatient or an outpatient basis in a hospital, occurring between October 1, 1973, and September 30, 1976. Rates of burn injuries by age and by burn type were calculated for each city. Examination of the data revealed large differences in the magnitude of the age-specific incidence rates among cities, but remarkably similar patterns of rates for each city. Differences in the economic status among the cities and among census tracts within the cities appeared to explain a large proportion of the variation in the crude burn rates. A similar specificity of certain types of burn injury by age and sex was common to each city. These findings can be used by health education specialists to design and implement burn prevention programs in these communities appropriate for those individuals at highest risk.

1974 Upstate New York Survey of Hospitalized Burn Injuries

G. Feck, M. Baptiste, J. Maslowsky, C. Rosch, and P. Greenwald. Burn Injury Control Program, Division of Epidemiology, New York State Department of Health, 1977 Mar.

Results of a survey of all 1974 admissions to upstate New York hospitals for burn injury are reported. The following are among the variables dealt with: age, race, and sex of patient; county of residence; hospital of admission; place of injury; incidence rates; and associated environmental hazards.

Statistics and Epidemiology of Burns

A.P. Iskrant. BULL NY ACAD MED 1967 Aug; 43(8):636-45.

The article provides an overview of factors influencing rates for injuries and deaths due to burns. These include age, sex, race, place and cause of occurrence, and geographical location. A breakdown by age groups of the most common circumstances of injury follows.

Burns in Children: A Five Year Study of a Burns Unit

J.S.G. Biggs and A.M. Clarke. MED J AUST 1964 May 23;1(21):787-92.

Results of a survey of 794 patients admitted to the Royal Children's Hospital Burn Unit in Melbourne, Australia, between 1957 and 1962 are reviewed. Factors evaluated include treatment, age and sex of victims, causes and prevention of burns, duration of hospital stay, and fatalities.

Burn Causation: Its Many Sides

G.F. Crikelair, F.C. Symonds, R.N. Ollstein, and A.I. Kirsner. J TRAUMA 1968 Jul;8(4):572-82.

The results of a number of major burn surveys are summarized. The authors' own study of burn victims admitted to the Harlem Hospital Center, which deals mainly with burn causation and its applications to the field of prevention, is discussed.

Burns

A.W. Wilkinson. COMMUNITY HEALTH 1970 Jul-Aug;2(1):23-8.

The author discusses the burn hazards of open space heaters and low income housing to children and the necessity for adequate parental supervision. The extensive treatment required for patients with severe burns is described, and thermal injury and fatality rates are compared with the rates for other injuries.

Nonfatal Burns of Children in a Well-Developed Urban Population

J.A. Waller and D.I. Manheimer. J PEDIATR 1964 Dec;65(6 Part 1):863-9.

A study of all nonfatal burns in children, including those who required hospitalization and those treated on an outpatient basis, in the Oakland-Berkeley, California, area concerns the following factors: injury rates, causative agents and activity, seasonal variation, severity of burn, anatomic distribution, relation of age to certain types of injuries, and corresponding preventive recommendations.

The Burn-Prone Society (Editorial)

F.D. Moore. JAMA 1975 Jan 20;231(3):281-2.

Because of the seriousness, frequency, and high medical costs of burn injury, effective means of prevention should be used. Factors deeply rooted in the "American Way of Life" contributing to the occurrence of burns include an abundance of energy sources (gasoline, oil, gas), unsafe space heaters, flammable clothing, use of alcohol and tobacco, high speed vehicles, and outdoor barbeques.

Fire Incidents Involving Flammable Liquids, Gas, and Dry Explosives

E.A. Tyrell. National Technical Information Service, U.S. Department of Commerce, 1975 Oct (Report No. NBSIR 75-84), 52 pp.

Frequency, demographic characteristics of patients, accident sequence, and severity of injury are described for 863 patients. The study was undertaken to determine what patterns or trends may exist which might aid in the reduction of injuries associated with these materials.

Liquid Propane Cold Injury: A Clinicopathologic and Experimental Study

L.M. Hicks, J.L. Hunt, and C.R. Baxter. J TRAUMA 1979 Sep;19(9):701-3.

Authors' abstract: A case of liquid propane cold injury is described. This injury was produced by evaporative heat loss, without ignition, from skin and underlying tissues. The cutaneous appearance was that of a flame burn, but underlying deep tissue damage was present. Acute vascular compromise and progressive wound sepsis were complications which required surgical intervention. A liquid propane animal model was created which defined the pathophysiology of the clinical injury. The potential for this injury exists wherever volatile liquified gases are used.

Home Burns and Fire Deaths and Injuries—Nature and Extent of the Problem

U.S. Department of Health, Education, and Welfare, 1972 Jul (DHEW publication No. (HSM) 73-10001) (out of print).

Analyses are given of the factors influencing burn injury or death according to place of occurrence, age, color, sex, health region and state, and items involved. Specific problems are thoroughly explained—how the most common burn injuries occur and what can be done in the future to prevent them.

Smoke Inhalation: Assessment and Management

D. Ewers. JEN 1979 Jan-Feb;5(1):4-9.

Author's summary: The respiratory tract damage experienced by burn victims after inhalation of smoke is a chemical burn resulting from contact with toxic pulmonary irritants found in smoke. Inhalation of carbon monoxide also found in smoke usually results in significant hypoxemia. When severe, smoke inhalation can cause adult respiratory distress syndrome, sometimes known as shock-lung, the wet-lung syndrome, or the stiff-lung syndrome. When complications occur, they are most likely to begin with respiratory insufficiency, followed by pulmonary edema and bronchopneumonia. Patients who sustain facial burns or who are found in enclosed areas filled with dense smoke are particularly prone to respiratory insufficiency. It is essential for the nurse giving emergency care to assess the patient's respiratory and mental status. A complete history, physical examination, and laboratory analysis of arterial oxygen saturation and carboxyhemoglobin levels can provide data on which appropriate management is based. Patients who appear confused, or who have singed nasal hair, blackened or burned mucosa, or signs of respiratory distress should be admitted to the hospital. A patient who has been exposed to thick smoke, even though relatively asymptomatic, should be admitted for 24-h observation and treated with oxygen. Serial blood gas levels are useful indicators of the patient's condition. The value of aggressive oxygen therapy in the treatment of such patients cannot be over-emphasized. Fluid intake should be carefully monitored, and precautions taken so as not to overload the pulmonary system. Drug therapy includes antibiotics, steroids, bronchodilators, and histamines. Narcotics and sedatives may depress respiration and should be used judiciously. The patient with respiratory complications requires constant monitoring and is best cared for in an intensive care environment; therefore, once the patient's condition is stable, the emergency department nurse should arrange for transfer to an intensive care unit or burn treatment center.

Pathophysiology and Management of the Complications Resulting from Fire and the Inhaled Products of Combustion: Review of the Literature

A. Fein, A. Leff, and P.C. Hopewell. CRIT CARE MED 1980 Feb;8(2):94-8.

Authors' abstract: Respiratory dysfunction is a major consequence of smoke inhalation and significant surface burns. Carbon monoxide intoxication, asphyxia, and upper airway obstruction occur early, whereas pulmonary edema and bacterial pneumonia may be delayed for days or weeks. The noxious constituents of smoke are believed to stimulate irritant receptors, producing bronchoconstriction, and to cause chemical injury to the airway mucosa and the alveolar-capillary membrane, producing pulmonary edema. Pneumonia occurs in most patients who survive the initial injury. Thorough history and physical and laboratory examinations may forecast the severity of injury. Treatment includes administration of oxygen, use of bronchodilators, and, when necessary, mechanical ventilation. The long-term sequelae of smoke inhalation are unknown.

Acute and Chronic Effects of Firefighting on Pulmonary Function

J. Loke, W. Farmer, R.A. Matthay, C.E. Putman, and G.J. Smith. CHEST 1980 Mar;77(3):369-73.

Authors' abstract: The acute and chronic effects of firefighting on pulmonary function were studied in 54 firefighters from Connecticut, 32 smokers, and 22 nonsmokers. Baseline studies of maximum expiratory flow-volume curves while the subject was breathing air and a mixture of 80% helium and 20% oxygen revealed obstruction of the small airways in 35% (9) of 26 smokers and 13% (2) of 15 nonsmokers. Cigarette smoking appears to be a major contributor to obstruction of the airways in firefighters. In the nonsmoking group, disease of the small airways was present only in firefighters with at least 25 years of firefighting, and none of them had respiratory complaints. In seven firefighters retested immediately after mild exposure to a fire in a building, no significant changes in pulmonary function were noted. One firefighter trapped in a fire in a basement had a high level of carboxyhemoglobin (42%) and developed a severe obstructive ventilatory defect, which persists 2½ years after the fire. The

significance of disease of the small airways in firefighters with chronic exposure remains to be elucidated with long-term studies; however, acute significant exposure may be associated with irreversible pulmonary injury in firefighters.

Types of Respiratory Injury

R.H. Bartlett. J TRAUMA 1979 Nov;19(11 Suppl):918-9.

From author's discussion: Respiratory failure is the major cause of death in burn patients. There are three categories of respiratory injury: smoke inhalation alone; burns without concomitant smoke inhalation (including upper airway edema); and the combination of burns and smoke inhalation. With expert care, morbidity and mortality in the first two categories should be very low. Mortality is very high in the third category. The patient with surface burns, airway injury, and smoke inhalation is subject to increased pulmonary capillary permeability and hypoventilation at a time when metabolic and immunologic processes are maximally stressed. Treatment goals for these patients should include: avoiding edema, maintaining normal pulmonary capillary integrity, avoiding pulmonary infection, minimizing fibrosis, avoiding hypoventilation, assuring adequate monitoring, and keeping the airways clear. Research efforts should be focused on mechanisms of prevention and treatment of increased pulmonary capillary permeability and the interrelationships of lung injury, interstitial edema, infection, and fibrosis.

Postburn Respiratory Injuries in Children

E.L. Charnock and J.J. Meehan. PEDIATR CLIN NORTH AM 1980 Aug;27(3):661-76.

Authors' abstract: Respiratory tract injury is a leading cause of mortality, morbidity, and prolonged hospitalization in fire casualties. Direct insults include inhalation of superheated gas, steam, smoke, or toxic fumes. Indirect injury may result from interference with the mechanics of respiration. Pulmonary injuries result from sepsis, fluid overload, endogenous reactive substances, and "shock lung" and also occur secondary to metabolic disturbances resulting from hypoxia.

Burn Injuries Associated with Road Trauma

S.P. Pegg and T.D. Mayze. AUST NZ J SURG 1980 Dec;50(6):593-6.

Authors' abstract: This paper details the results of an 11-year survey of patients admitted to the burns unit at the Royal Brisbane Hospital with injuries secondary to motor vehicle accidents. There were 64 subjects in this group. Forty-five were involved in car accidents and 19 in cycle accidents. Fifty of the patients were male, with a mean age of 26.9 years. The mean age of the 14 females was 24.9 years. Petrol fires emerged as the major source of injury in those individuals involved in car accidents, but hot metal injured most of the cyclists. Cyclists did not seem to be more prone to friction burns than motorists. Burns to the limbs predominated, but respiratory burns occurred in seven of the eight patients who did not survive. The median duration of hospitalization was 21 days, and the death rate in this series was 12.5%.

Corneal Burns from Watch Battery Explosion (Letter)

A.W. Zieker and J. Wisnicki. AM J OPHTHALMOL 1979 Oct;88(4):798-9.

A 10-year-old girl who suffered corneal burns after the spontaneous explosion of a silver-oxide battery in her electronic digital wristwatch is reported. The explosion sprayed a substance over the patient's face and into her eyes. Although the patient's mother immediately irrigated the eyes with water for 5 min, the patient complained of blurry vision and was brought to the emergency room. Mild conjunctival injection was observed on physical examination. Slit-lamp examination revealed bilateral corneal epithelial burns and clear anterior chambers. There were no signs of penetrating injury. At followup examination, the patient's vision was normal and the corneas were clear. This case report may indicate an environmental hazard that may be seen more frequently with the increased use of miniature batteries.

Eye Injuries Due to Fireworks: Results of 1969 Survey

E.M. Hatfield. SIGHT SAV REV 1970 Summer; 40:93-9.

More adequate legislation banning the retail sale of all fireworks is recommended, on the basis of evidence provided by two surveys reported. The surveys, one of which deals exclusively with eye injuries, evaluate the following factors: type of firework, sex and age of victim, and circumstances and type of injury.

SELECTED BIBLIOGRAPHY

*Anonymous: Electrical burns and shocks to children. FDA PAPERS 1971 Apr: 29-31.

Anonymous: Fabrics and accidental burns. CLIN PEDIATR 1967 Aug;6:455.

Barnako D: Flammable fabrics. JAMA 1972 Jul 10;221(2):189.

*Bartlett RH: Types of respiratory injury. J TRAUMA 1979 Nov;19(11 Suppl):918-9.

Bergman AB: Flammable fabrics revisited. NORTHWEST MED 1968 Feb;67:135.

*Biggs JSG, Clarke AM: Burns in children: a five-year study of a burns unit. MED J AUST 1964 May 23;1(21):787-92.

Birch JR: Flammable fabrics and human burns (editorial). CAN J SURG 1971 May;14:177-9.

*Blandford SE: Electrical burns of the mouth in children. ROCKY MT MED J 1968;65:25-8.

Bleck EE: Causes of burns in children. JAMA 1955 May 14;158(2):100-3.

Bolles EH: Fire and accident hazards in food service. HOSPITALS 1962 Jun 1;36(2):86+.

Bowers WF: Accidental burns. INT SURG 1966 Oct;46(4):338-9.

Brown EW: Hazards to health: space-heater hazards. N ENGL J MED 1961 Oct 19;265:794-5.

Bull JP, Jackson DM, Walton C: Causes and prevention of domestic burning accidents. BR MED J 1964 Dec 5;2:1421-7.

*Cantrell RW, Johns ME, Jahrsdoerfer RA, McLean WC: Foreign body and caustic ingestion: management 1979. ANN OTOL RHINOL LARYNGOL 1979 Nov-Dec;88(Pt 1):872-9.

*Charnock EL, Meehan JJ: Postburn respiratory injuries in children. PEDIATR CLIN NORTH AM 1980 Aug;27(3):661-76.

*Crikelair GF, Symonds FC, Ollstein RN, Kirsner AI: Burn causation: its many sides. J TRAUMA 1968 Jul;8(4):572-82.

*Esses SI, Peters WJ: Electrical burns: pathophysiology and complications. CAN J SURG 1981 Jan;24(1):11-4.

*Ewers D: Smoke inhalation: assessment and management. JEN 1979 Jan-Feb;5(1):4-9.

*Feck G, Baptiste M, Maslowsky J, Rosch C, Greenwald P: 1974 upstate New York survey of hospitalized burn injuries. Burn Injury Control Program, Division of Epidemiology, New York State Department of Health, 1977 Mar.

*Fein A, Leff A, Hopewell PC: Pathophysiology and management of the complications resulting from fire and the inhaled products of combustion: review of the literature. CRIT CARE MED 1980 Feb;8(2):94-8.

Freedman HA: Pile fabrics and their flammability. BULL NY ACAD MED 1967 Aug;43(8):663-8.

Gillespie RW: The battered child syndrome: thermal and caustic manifestations. J TRAUMA 1965 Jul;5(4):523.

*Gonski L: Prevention of tea and coffee scalds (letter). MED J AUST 1979 Nov 3;2(9):484.

*Hatfield EM: Eye injuries due to fireworks: results of 1969 survey. SIGHT SAV REV 1970 Summer;40:93-9.

*Hawkins DB, Demeter MJ, Barnett TE: Caustic ingestion: controversies in management. A review of 214 cases. LARYNGOSCOPE 1980 Jan;90(1):98-109.

*Hicks LM, Hunt JL, Baxter CR: Liquid propane cold injury: a clinicopathologic and experimental study. J TRAUMA 1979 Sep;19(9):701-3.

Hummel RP, McConnell CM: Jailhouse burns. J TRAUMA 1976 Mar;16(3):232-4.

*Iskrant AP: Statistics and epidemiology of burns. BULL NY ACAD MED 1967 Aug;43(8):636-45.

Jackson DM: Injuries from fireworks. BR MED J 1961 Nov 4;5261:1184-7.

*Juillerat EE Jr: Survey of fatal clothing fires. BULL NY ACAD MED 1967 Aug;43(8):646-8.

King BG Jr, Abston S, Evans EB: A survey of motor vehicle burn accidents in children: report of 45 cases. J TRAUMA 1975 Jun;15(6):490-3.

*Abstracted

Kuhn HS: Eyes and chemicals. NATIONAL SAFETY CONGRESS TRANSACTIONS 1964;5:55-6.

*Langley J, Dodge J, Silva PA: Scalds to preschool children. NZ MED J 1981 Feb 11;93(677):84-7.

*Learmonth A: Factors in child burn and scald accidents in Bradford 1969-73. J EPIDEMIOL COMMUNITY HEALTH 1979 Dec;33(4):270-3.

*Learmonth AM: Domestic child burn and scald accidents (analysis of data from 4 Indian burn units). J INDIAN MED ASSOC 1979 Jul 16;73(2):43-7.

*Loke J, Farmer W, Matthay RA, Putman CE, Smith GJ: Acute and chronic effects of firefighting on pulmonary function. CHEST 1980 Mar;77(3):369-73.

*MacKay A, Halpern J, McLoughlin E, Locke J, Crawford JD: A comparison of age-specific burn injury rates in five Massachusetts communities. AM J PUBLIC HEALTH 1979 Nov;69(11):1146-50.

Maisels DO, Corps BVM: Burned epileptics. LANCET 1964 Jun 13;1:1298-1301.

*Maisels DO, Ghosh J: Predisposing causes of burns in adults. PRACTITIONER 1968 Nov;201:767-73.

*Martin HL: Antecedents of burns and scalds in children. BR J MED PSYCHOL 1970 Mar;43:39-47.

Millar R, Colville J, Hughes NC: Burns to infants using walking aids. INJURY 1975;7(1):8-10.

*Moore FD: The burn-prone society (editorial). JAMA 1975 Jan 20;231(3):281-2

Munster AM, Scheulen J, Petr L: High-voltage electrical injuries. MD STATE MED J 1980 Nov;29(11):30-3.

Nayak SK: Deaths due to electric flash burns. J FORENSIC MED 1967 Jan-Mar;14(1):22-9.

*Noyes R Jr, Frye SJ, Slymen DJ, Canter A: Stressful life events and burn injuries. J TRAUMA 1979 Mar;19(3):141-4.

*Pakkala L: The flammability of different textiles and its influence on the severity of skin burns. ANN CHIR GYNAECOL 1980;69(5):240-3.

*Pegg SP, Mayze TD: Burn injuries associated with road trauma. AUST NZ J SURG 1980 Dec;50(6):593-6.

*Persley GV, Pegg SP: Burn injuries related to suicide. MED J AUST 1981 Feb 7;1(3):134.

Ponten B: Burns in automobile accidents. SCAND J PLAST RECONSTR SURG 1968;2:104-8.

*Remensnyder JP, von Ryll Gryska P: Hazards of wood-burning stoves to children (letter). N ENGL J MED 1981 Apr 9;304(15):915-6.

Richards EH: Aspects of epilepsy and burns. EPILEPSIA 1968;9:127-35.

Richardson WR, Foerster DW: Causes of burns in Oklahoma. OKLAHOMA STATE MEDICAL ASSOCIATION JOURNAL 1959 Nov;52(11):713-20.

Robinson SS: The causes of burns of children in Scotland. BR J PLAST SURG 1968 Apr;21:140-6.

*Savage JP, Leitch IOW: Childhood burns: a sociological survey and inquiry into causation. MED J AUST 1972 Jun 24;1:1337-42.

Sorensen B: Electrical hand burns. SCAND J PLAST RECONSTR SURG 1968;2:67-70.

*Stone NH, Rinaldo L, Humphrey CR, Brown RH: Child abuse by burning. SURG CLIN NORTH AM 1970 Dec;50(6):1419-24.

*Tyrell EA: Fire incidents involving flammable liquids, gas, and dry explosives. National Technical Information Service, U.S. Department of Commerce, 1975 Oct (Report No. NBSIR 75-84), 52 pp.

*U.S. Department of Health, Education, and Welfare: Home burns and fire deaths and injuries—nature and extent of the problem. U.S. Department of Health, Education, and Welfare, 1972 Jul (DHEW publication No. (HSM) 73-10001) (out of print).

United States Senate: Flammable fabrics and other fire hazards to older Americans. Hearing before the Special Committee on Aging, United States Senate, U.S. Government Printing Office, 1971 Oct 12.

Waller JA: Hazards to health: tic-tac-toe burns: the hazard of exposed floor-type room heaters. N ENGL J MED 1961 Dec 21;265:1256-7.

*Waller JA, Manheimer DI: Nonfatal burns of children in a well-developed urban population. J PEDIATR 1964 Dec;65(6 Part 1):863-9.

Whitehead KP: Chemical burns of the eye. TRANS OPHTHALMOL SOC UK 1965;85:617-29.

*Wilkinson AW: Burns. COMMUNITY HEALTH 1970 Jul-Aug;2(1):23-8.

Wilkinson AW: Burns and scalds in children: an investigation of their cause and first-aid treatment. BR MED J 1944 Jan 8;1:37-40.

*Williams-Leir G: Deaths from clothing and bedding fires. CAN J PUBLIC HEALTH 1968 Oct;58:444-53.

*Abstracted

*Young TL, Reisinger KS: Wall socket electrical burns: relevance to health education? PEDIATRICS 1980 Apr;65(4):825-7.

*Zieker AW, Wisnicki J: Corneal burns from watch battery explosion (letter). AM J OPHTHALMOL 1979 Oct;88(4):798-9.

*Abstracted

BURN INJURY PREVENTION

Development of a Preventive Fire Education Program Based on a Profile of the Hospitalized Burn Victim

W.R. Lalor. J SCH HEALTH 1981 Feb;51(2):80-4.

From author's discussion: In designing a preventive fire-education program, the author considered four questions regarding burns and a likely educational format: (1) What relationships exist between hospitalized burn victims and environmental circumstances? (2) What population segments are most likely to suffer burns? (3) What preventive measures might be considered to reduce the incidence of burns? (4) What educational formats might be applicable in developing a continuing preventive fire-education program for Saint Joseph's Hospital's service area (Elmira, New York, and environs)? The present research engendered two related and sequential activities: (1) the determination of a local burn profile and (2) the development of a preventive fire-education module cluster with concomitant evaluation procedures. The module cluster offered an effective preventive fire-education program, as evidenced by a statistically and educationally significant change in student knowledge related to fire education. Materials were packaged for teachers and students so that module objectives were made concise and directional by a variety of methodological approaches. Pretests and posttests offered measurable evaluation of the students' progress. The solution to the nation's fire and burn problems rests with the development of a well-planned educational program, the author concludes.

Determinants of Injury and Opportunities f Intervention

S.P. Baker. AM J EPIDEMIOL 1975;10 98-102.

Characteristic factors of injury victims—age, sex, genetics, socioeconomic-cultural status, physical and mental makeup—are examined to determine their relationship to injury rates. The following "four general categories of countermeasures" are described: modification of the environment; perceptual aids, training, and education; strengthening the individual; and emergency response.

Injury Control

S.P. Baker. In: P.E. Sartwell, ed. Preventive Medicine and Public Health, 10th ed. New York: Appleton-Century-Crofts, 1973:987-1005.

The author emphasizes the importance of recognizing "accidents" as a health problem with nonrandom distribution rather than individual behavior problems. The following aspects of controlling injury before, during, and after actual incidents are examined: the magnitude of the problem; host factors—age, sex, alcohol involvement; environmental factors—socioeconomic and physical environment; mechanical, electrical, and thermal energy and their vectors; chemical interactions; role of public agencies—information collection, regulation, education; and choice and evaluation of safety measures. Many specific references to burns are included.

Reducing Injuries and Their Results: The Scientific Approach

S.P. Baker and W. Haddon, Jr. MMFQ/HEALTH AND SOCIETY 1974 Fall:377-89.

The authors stress the need to deal with injury prevention in the same scientific manner that diseases and other environmental hazards are dealt with, with emphasis on controlling etiologic agents and not behavior patterns. Measures to protect against injury before, during, and after harmful events which require no active participation on the part of the public are recommended.

Individual Versus Community Orientation in the Prevention of Injuries

P.Z. Barry. PREV MED 1975;4:47-56.

The author discusses the advantages of prevention programs that recognize the responsibility of the community for product safety as opposed to previously used educational programs which placed the responsibility of injury prevention and blame for injury on the individual.

Burns in Older Patients

H. Slater and J.C. Gaisford. J AM GERIATR SOC 1981 Feb;29(2):74-6.

Authors' abstract: An increasing percentage of the burn victims admitted to the Western Pennsylvania Hospital and Burn Care Center are aged 65 or older. Among 108 such elderly patients admitted during the past 6 years, 68 died and 40 survived—a mortality rate of 63%. Those who died of burns (average age, 76.4) had burns over 44.8% of the mean body surface, whereas the survivors (average age, 73.5) had burns over a smaller area (16.7%). Survival also was related to the presence of significant heart and lung disease that antedated the thermal injury. Treatment of the burns was in keeping with standard recommendations for intravenous fluid resuscitation, wound care, and skin grafting. Cimetidine and antacids proved effective in the prevention of significant gastrointestinal bleeding. Ninety percent of the survivors returned to their homes after treatment. Although the mortality for elderly burn patients remains high, the favorable results in rehabilitation of the survivors are encouraging. Increased attention should be paid to safety programs for the elderly and those who care for them to prevent such serious accidental injuries.

Reducing Fire and Burn Hazards among the Elderly

E.V. Beverley. GERIATRICS 1976 May;31(5): 106-10.

Elderly persons have an increased risk of being severely or fatally burned. Research, which preventive programs can use, is reported in the following areas: identification of circumstances surrounding the majority of injuries involving the elderly population, production of flame-retardant fabrics and problems impeding their widespread use, and the public's lack of safety consciousness and material available to remedy this.

Electrical Accidents

J.F. Erskine. PRACTITIONER 1979 Jun;222 (1332):777-81.

Author's conclusion: Good medical and nursing care can reduce the disability of those who survive the immediate effects of electrical injuries, particularly because so many of these are burns. The reduction in the number of deaths, however, is a matter of sense and strict adherence to safety rules in the handling of electrical plants together with training of those doing such work in prompt, simple, safe, and efficient first aid.

What's New in Burns?

M.B. Cavender. NATIONAL SAFETY CONGRESS TRANSACTIONS 1964;28:26-30.

In a study of 142 burned children receiving first aid from the Tennessee Department of Health the following factors are reviewed: age, race, and sex distribution of the victims, along with circumstances, time of day, and month of the accidents. The gap between knowledge of safety measures and their actual implementation and the belief that most injuries are unavoidable accidents are seen as contributing factors to burn injury. The need and means for achieving effective educational programs are discussed.

The Epidemiology of Burns: The Cause and Control of Burns in Children

E.I. Smith. PEDIATRICS 1969 Nov;44(Suppl): 821-7.

In this review of burn patients admitted to the Children's Mercy Hospital, Kansas City, Missouri, during the years 1966 and 1967, the following variables are evaluated: age, sex, past medical history, mortality, etiology, severity, seasonality, socioeconomic factors, and clothing involvement. Prevention programs dealing with fabrics, household appliances, and heating units are suggested. The roles the hospital staff and the private physician should take are outlined.

Rockland County Child Injury Prevention Project, 1960-1963

E.R. Schlesinger, J. Westaby, V.M. Logrillo, et al. New York: Rockland County Department of Health, 1963.

In an intensive 3-year study of the effects of an elaborate health education program in comparable study and control groups, no reduction in injury rates was detected. The education program initiated neighborhood discussion meetings of housewives with volunteer and professional leaders, a monthly newsletter, and involvement of groups including the PTA, Girl Scouts, and Red Cross.

Pittsburgh Burn Study

J.I. Barancik and M.A. Shapiro. Environmental Health Program, Department of Public Health Practice, Graduate School of Public Health, University of Pittsburgh, 1972 May.

This well-controlled, well-designed population study of burns in Pittsburgh and Allegheny County, Pennsylvania, between June 1970 and April 1971 covers numerous factors pertinent to prevention. The 236-page report, which emphasizes outpatient data and the role of flammable fabrics, is highly recommended to anyone interested in this field.

Prevention of Burns and Scalds in a Developed Country

B. Sorenson. J TRAUMA 1976 Apr;16(4):249-58.

The importance of developing prevention programs based on data including all burn victims—inpatients, outpatients, those treated by general practitioners, and those fatally injured—as opposed to data limited to hospitalized patients is stressed. A brief outline of necessary steps for effective prevention is given, along with examples of successful programs initiated by the author in Denmark.

Scald Burns from Hot Tap Water

M.L. Katcher. JAMA 1981 Sep 11;246(11): 1219-22.

Author's abstract: Hot tap water is a common source of household burn injury. The charts of all patients hospitalized for tap water scalds in Dane County, Wisconsin, during a 10-year period were reviewed. Of 33 patients, 29 (88%) had readily identifiable risk factors: 17 (52%) were children younger than 5 years; three (9%) were older than 65 years; ten (30%) were physically or mentally disabled. One additional person was burned in a nonhome environment. Of the five deaths, three occurred in children younger than 30 months, and two occurred in patients older than 70 years. Almost all of these injuries could have been prevented by lowering the temperature of the household water heater to below 54.4° C (130° F) and preferably between 48.9° and 51.7° C (120° to 125° F). Physicians can play an important role in the prevention of this type of injury.

Preventing Tap Water Burns

M.S. Baptiste and G. Feck. AM J PUBLIC HEALTH 1980 Jul;70(7):727-9.

Authors' abstract: On the basis of a 1974-1975 survey of hospital records in upstate New York, we estimate that 347 tap water burns will require inpatient treatment annually, with children and the elderly at increased risk. The number and severity of burns from tap water make them an important prevention priority. Reducing the temperature of household hot water supplies could be a practical and effective prevention measure.

Energy Damage and the Ten Countermeasure Strategies

W. Haddon, Jr. J TRAUMA 1973 Apr;13(4): 321-31.

The author makes a distinction between describing the results of certain phenomena and understanding the processes involved and relates this to injury prevention. Viewing "accidents" as damaging energy transfers, he proposes 10 strategies to reduce losses incurred at various points in the sequence of events. The appendices provide practical examples of each strategy and case studies illustrating the usefulness of this method. One of these studies is "Reducing Thermal Energy Damage to Children and Others."

The Prevention of Accidents

W. Haddon, Jr. In: D.W. Clark and B. MacMahon, eds. Preventive Medicine. Boston: Little, Brown and Company, 1967:591-621.

This useful overview provides a perspective on injuries among public health problems. Several types of injuries and general principles of injury prevention are discussed.

The Educational Effectiveness of Fire Demonstrations

H.P. Hopkins, Jr. PUBLIC HEALTH REP 1967 Jul;82(7):645-9.

An evaluation of fire prevention demonstrations showed that knowledge and opinions were effectively changed, but that some groups made greater changes than others. Those making the least gain in knowledge and opinion were older, rural, nonwhite, less educated persons who rented their homes.

Smoke Detectors

Anonymous. CONSUMER REPORTS 1976 Oct; 41(10):555-9.

The operation of two types of smoke detectors, ionization and photoelectric, is explained, and the strengths and weaknesses of both are described. Features of the detectors which insure efficiency are reviewed. On the basis of a testing procedure detailed in this article, various brands are rated. Locations for detectors in the home are suggested.

Update: Smoke Detectors

Anonymous. CONSUMER REPORTS 1977 May; 42(5):283.

New models of smoke detectors are evaluated. Recommendations are made as to which brands the consumer should purchase.

SELECTED BIBLIOGRAPHY

*Anonymous: Smoke detectors. CONSUMER REPORTS 1976 Oct;41(10):555-9.

*Anonymous: Update: smoke detectors. CONSUMER REPORTS 1977 May;42(5):283.

*Baker SP: Determinants of injury and opportunities for intervention. AM J EPIDEMIOL 1975;101(2):98-102.

*Baker SP: Injury control. In: Sartwell PE, ed. Preventive medicine and public health, 10th ed. New York: Appleton-Century-Crofts, 1973:987-1005.

*Baker SP, Haddon W Jr: Reducing injuries and their results: the scientific approach. MMFQ/HEALTH AND SOCIETY 1974 Fall:377-89.

*Baptiste MS, Feck G: Preventing tap water burns. AM J PUBLIC HEALTH 1980 Jul;70(7):727-9.

*Barancik JI, Shapiro MA: Pittsburgh burn study. Environmental Health Program, Department of Public Health Practice, Graduate School of Public Health, University of Pittsburgh 1972 May.

*Barry PZ: Individual versus community orientation in the prevention of injuries. PREV MED 1975;4:47-56.

*Beverley EV: Reducing fire and burn hazards among the elderly. GERIATRICS 1976 May;31(5):106-10.

Borland BL: Prevention of childhood burns: conclusions drawn from an epidemiologic study. CLIN PEDIATR 1967 Dec;6(12):693-5.

Bright RG: Recent advances in residential smoke detection. FIRE JOURNAL 1974 Nov;68(6):69-77.

*Cavender MB: What's new in burns? NATIONAL SAFETY CONGRESS TRANSACTIONS 1964;28: 26-30.

Coggan WA: Fire precautions in community health. COMMUNITY HEALTH 1970 Sep/Oct;2(2):95-100.

Colebrook L, Colebrook V: A suggested national plan to reduce burning accidents based on a study of 2,000 cases. LANCET 1951 Sep 29;2:579-84.

Colebrook L, Colebrook V, Bull JP, Jackson DM: The prevention of burning accidents: a survey of the present position. BR MED J 1956 Jun 16;1:1379-86.

Crikelair GF, Dhaliwal AV: The cause and prevention of electrical burns of the mouth in children: a protective cuff. PLAST RECONSTR SURG 1976 Aug;58(2): 206-9.

Day N: What's new in home safety? NATIONAL SAFETY CONGRESS TRANSACTIONS 1964;28: 24-6.

Division of Accident Prevention, Bureau of State Services, Public Health Service: Accident prevention activities of the Public Health Service. PUBLIC HEALTH REP 1966 Feb;81(2):138-42.

*Erskine JF: Electrical accidents. PRACTITIONER 1979 Jun;222(1332):777-81.

Fogh-Anderson P, Sorenson B: Electric mouth burns in children: treatment and prevention. ACTA CHIR SCAND 1966;131:214-8.

*Haddon W Jr: Energy damage and the ten countermeasure strategies. J TRAUMA 1973 Apr;13(4):321-31.

*Haddon W Jr: The prevention of accidents. In: Clark DW, MacMahon B, eds. Preventive medicine. Boston: Little, Brown and Company, 1967:591-621.

Haddon W Jr, Baker SP: Injury control. In: Clark DW, MacMahon B, eds. Preventive and community medicine. 2nd ed. Boston: Little, Brown and Company, 1981:109-40.

Holmes RSB: Industrial experience in the use of flame-retardant fabrics. BULL NY ACAD MED 1967 Aug;43(8):716-22.

*Hopkins HP Jr: The educational effectiveness of fire demonstrations. PUBLIC HEALTH REP 1967 Jul;82(7):645-9.

Iowa Society for the Prevention of Blindness, Division of Injury Control of the State Department of Health: Operation peach: protect your eyes against chemical hazards. SIGHT SAV REV 1971;41:12-3.

Jensen GD: Preventive implications of a study of 100 children treated for severe burns. PEDIATRICS 1959 Oct;24:623-30.

*Abstracted

Joliet PV: Conference on burns and flame retardant fabrics: opening remarks. BULL NY ACAD MED 1967 Aug;43(8):615-6.

*Katcher ML: Scald burns from hot tap water. JAMA 1981 Sep 11;246(11):1219-22.

Keldoulis T: Eye safety in industry. MED J AUST 1967 Sep 16;2:565-6.

*Lalor WR: Development of a preventive fire education program based on a profile of the hospitalized burn victim. J SCH HEALTH 1981 Feb;51(2):80-4.

Margolis BL, Kroes WH: The human side of accident prevention. Springfield: Charles C. Thomas, 1975.

Nasilowski W, Zietkiewicz W: Evaluation of a thousand cases of burns: circumstances of the accidents and preventive measures. POL MED J 1968;7(6):1410-4.

Oglesbay FB: Getting rid of home fire and burn hazards: a demonstration. NATIONAL SAFETY CONGRESS TRANSACTIONS 1964;6:11-21.

Rich LA: Here is a safer way to prevent scalding patients. MOD HOSP 1966 Feb;106:146-8.

*Schlesinger ER, Westaby J, Logrillo VM, et al: Rockland County child injury prevention project, 1960-63. New York: Rockland County Department of Health, 1963.

Seery G, Youngleson J: The prevention of burns. S AFR MED J 1972 Apr 29;46:550-1.

*Slater H, Gaisford JC: Burns in older patients. J AM GERIATR SOC 1981 Feb;29(2):74-6.

*Smith EI: The epidemiology of burns: the cause and control of burns in children. PEDIATRICS 1969 Nov;44(suppl):821-7.

*Sorenson B: Prevention of burns and scalds in a developed country. J TRAUMA 1976 Apr;16(4):249-58.

Stoll AM, Chianta MA: Application of biophysical heat transfer studies in protection systems. U.S. Naval Air Development Center, Aerospace Medical Research Development, Warminster, Pa., 1967 Dec 29 (Report NADC-MR-6722).

Stoll AM, Chianta MA: Method and rating system for evaluation of thermal protection. AEROSPACE MED 1969 Nov;40:1232-8.

Swartz EM: Preventing burn injury. J NURS ADM 1973 Jan-Feb;3:9-11.

U.S. Department of Health, Education, and Welfare: Teach children fire will burn. Washington, D.C.: U.S. Government Printing Office, 1973.

☆ U.S. GOVERNMENT PRINTING OFFICE 1983--646-010/8234 Region #4

44Q172398203

*Abstracted

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333

OFFICIAL BUSINESS

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF HHS
HHS 396

THIRD CLASS
BLK. RT.